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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Andreas Barth

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EXAMINER

ROE, JESSEE RANDALL

ART UNIT

PAPER NUMBER

1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,896	Applicant(s) BARTH, ANDREAS	
	Examiner Jessee Roe	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-22, 26 and 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-22, 26 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Claims

Claims 11-22 and 26-27 are pending wherein claims 14-15 are amended, claims 1-10 and 23-25 are canceled, and claims 26-27 are new.

Status of Previous Objections

The previous objection to claim 15 for informalities is withdrawn in view of the Applicant's amendment to claim 15.

Status of Previous Rejections

The previous rejection of claims 14-15 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn in view of the Applicant's amendments to claims 14-15.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 11 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Serfozo et al. (US 4,055,975).

In regards to claims 11 and 27, Serfozo et al. ('975) discloses drop forging a Ti-6Al-4V alloy while at a temperature of approximately 1200°F -1950°F (col. 3, lines 1-62),

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which overlaps the temperature range of the instant invention, and cooling (col. 5, lines 5-21 and col. 7, lines 1-10).

Still regarding claim 27, Serfozo et al. ('975) discloses using commercially pure titanium (col. 3, lines 52-62).

Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Serfozo et al. (US 4,055,975) as applied to claims 11 and 23 above, and further in view of Adams et al. (US 5,342,458).

In regards to claims 13, Serfozo et al. ('975) discloses a Ti-6Al-4V alloy rod as described above, but Serfozo et al. ('975) does not specify that the rod would be used as a connecting rod.

Adams et al. ('458) discloses using the Ti-6Al-4V alloy as a connecting rod in automotive applications in order to increase fuel efficiency and correspondingly lower the operating costs of motor vehicles (col. 1, lines 16-39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the Ti-6Al-4V rod, as disclosed by Serfozo et al. ('975), for automotive applications such as a connecting rod, as disclosed by Adams et al. ('458), in order to increase fuel efficiency and lower the operating costs of motor vehicles, as disclosed by Adams et al. ('458) (col. 1, lines 16-39).

In regards to claim 12, the Examiner asserts that a connecting rod would be a moving part in a motor.

Claims 11-17, 19-22 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kusano et al. (US 6,077,369).

In regards to claim 11-15, 22 and 26-27, Kusano et al. ('369) discloses processing a Ti-6Al-4V alloy used for engine valves, which would be a moving part of a motor, wherein the alloy would be forged; hot straightened at a temperature in the range of 600-1000°C, which overlaps the range of heating within the range of 5-15°C above the α/β phase boundary; annealed for 1 hour (60 minutes) at a temperature in the range of 600-1000°C, which overlaps the temperature range of the instant invention (Example 4). Kusano et al. ('369) further discloses cooling the rod while applying a tension after straightening (claim 3).

With respect to the recitation "to form β phases" as recited in line 4 of claim 11, the Examiner notes that Kusano et al. ('369) discloses processing the alloy in the same or a substantially similar manner. Therefore, the formation of β phases would be expected. MPEP 2112.01 I.

With respect to the recitation "wherein the E-modulus and the rigidity of the Ti and/or Zr and/or Hf containing materials, or alloys thereof, are increased" of claim 16, the Examiner notes that Kusano et al. ('369) discloses processing the alloy in the same or a substantially similar manner. Therefore, the an increased E-modulus and rigidity would be expected. MPEP 2112.01 I.

In regards to claim 17, Kusano et al. ('369) also discloses processing Ti-6Al-2Sn-4Zr-6Mo alloys, which would contain greater than 80 weight percent titanium and 4 weight percent zirconium (col. 3, lines 14-24).

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In regards to claims 19-20, Kusano et al. ('369) discloses processing Ti-6Al-4V alloys, which would contain 90 weight percent titanium (col. 3, lines 14-24).

With respect to the recitation "wherein an α/β microstructure or composite material is formed" in claim 21, the Examiner notes that Kusano et al. ('369) discloses processing the same alloy in the same or a substantially similar manner. Therefore, the formation of an α/β microstructure or composite material would be expected. MPEP 2112.01 I.

Still regarding claim 27, Kusano et al. ('369) discloses using pure titanium (col. 3, lines 13-20).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serfozo et al. (US 4,055,975) or Kusano et al. (US 6,077,369) with evidence from the ASM Handbook Volume 2.

In regards to claim 18, Serfozo et al. ('975) or Kusano et al. ('369) disclose the processing of Ti-6Al-4V alloys as described above, but Serfozo et al. ('975) and Kusano et al. ('369) are silent with regard to the presence of hafnium in the alloys.

The ASM Handbook Volume 2 discloses that hafnium would be present in titanium at a level of 0.25 ppm (pg. 1096, Table 2).

Therefore, it would be expected that in the Ti-6Al-4V alloys, as disclosed by Kusano et al. ('369) or Serfozo et al. ('975), hafnium would be present in an amount of 0.25 ppm, as disclosed by the ASM Handbook Volume 2 because the ASM Handbook Volume 2 discloses that hafnium would be present at such impurity levels (pg. 1096, Table 2).

Response to Arguments

Applicant's arguments filed 4 February 2009 have been fully considered but they are not persuasive.

First, the Applicant primarily argues that the process of the instant invention is within specified critical temperature limitations such that in the alloy, during forming, the α -low temperature phase is replaced by the β -high temperature phase in such a manner that an α/β microstructure is produced.

In response, the Examiner notes that Serfozo et al. ('975) teaches (col. 3, lines 1-62) heating to a temperature in the range of 1200°F -1950°F (649-1065°C) and Kusano et al. ('369) teaches (Example 4) heating to a temperature in the range of a temperature in the range of 600-1000°C, which overlaps the temperature range of the instant invention. Where the principal difference between a claimed process and that taught by reference is a temperature difference, it is incumbent upon applicants to establish criticality of that difference. *Ex parte Khusid, Bezgodova, and Ruben*, 174 USPQ 59 (Bd. Pat. App. & Int. 1971).

Second, the Applicant primarily argues that hafnium present at impurity levels in an amount of 0.25 ppm is far from and does not render obvious the claimed range of 5-15 wt%.

In response, the Examiner notes that claim 18 only requires that zirconium be present in the range of 5-15 wt% and does not specifically require any particular amount of hafnium since there is no amount recited for hafnium.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571)272-5938. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art
Unit 1793

JR